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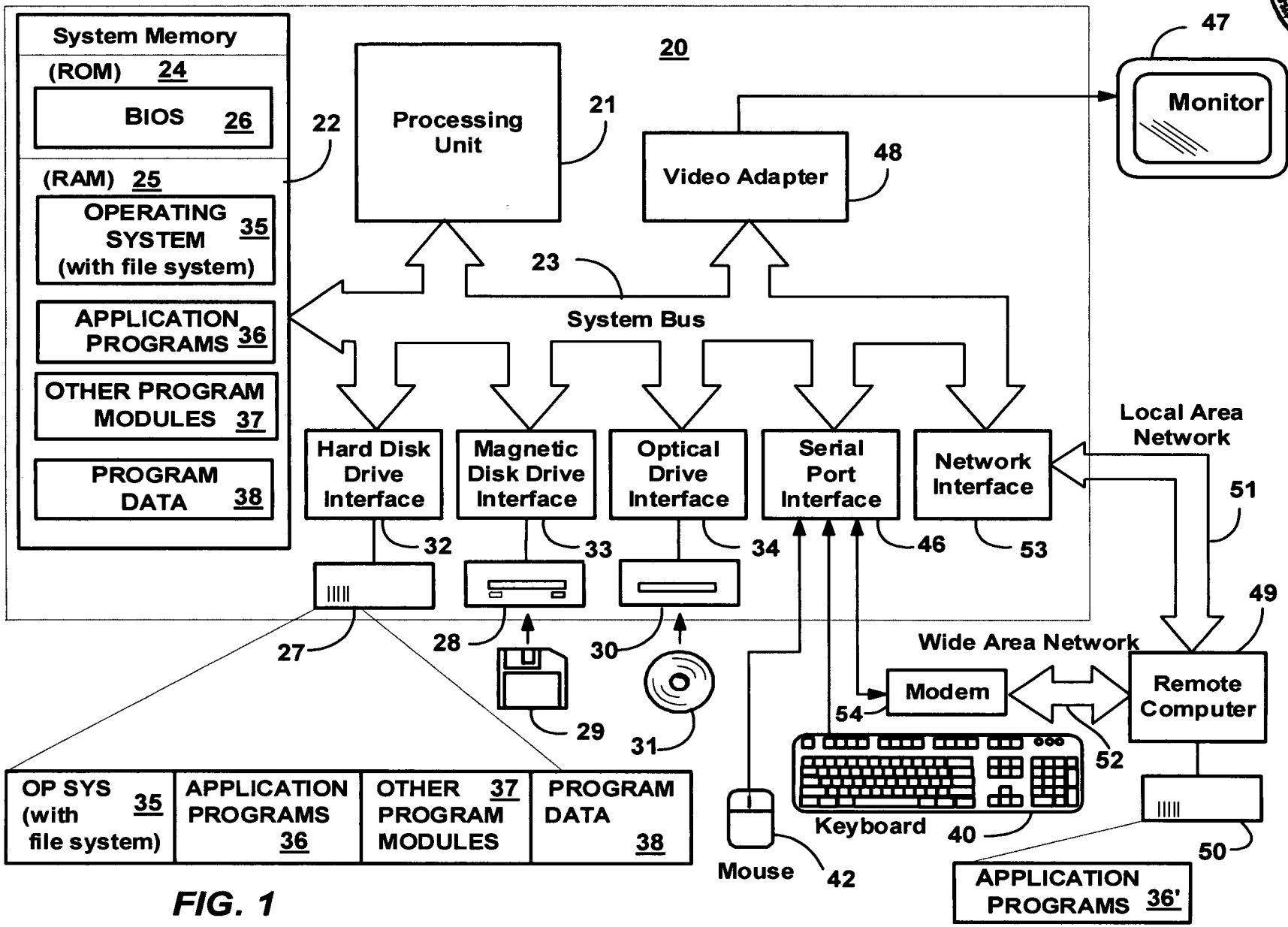


FIG. 1

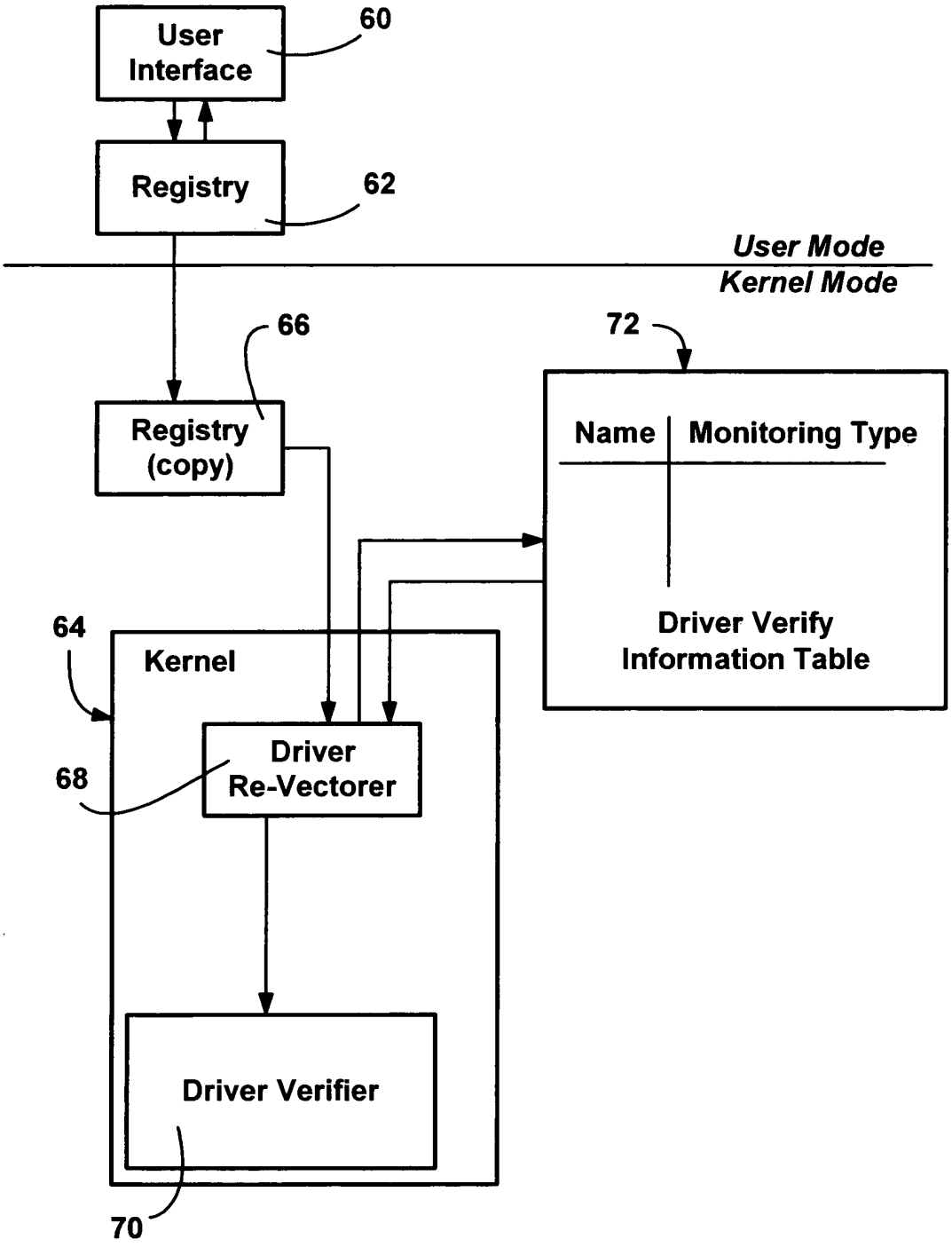

User Interface
60
Registry
62
User Mode
Kernel Mode
66
Registry (copy)
72
Name
Monitoring Type
Driver Verify Information Table
64
Kernel
Driver Re-Vectorer
68
Driver Verifier
70

FIG. 2

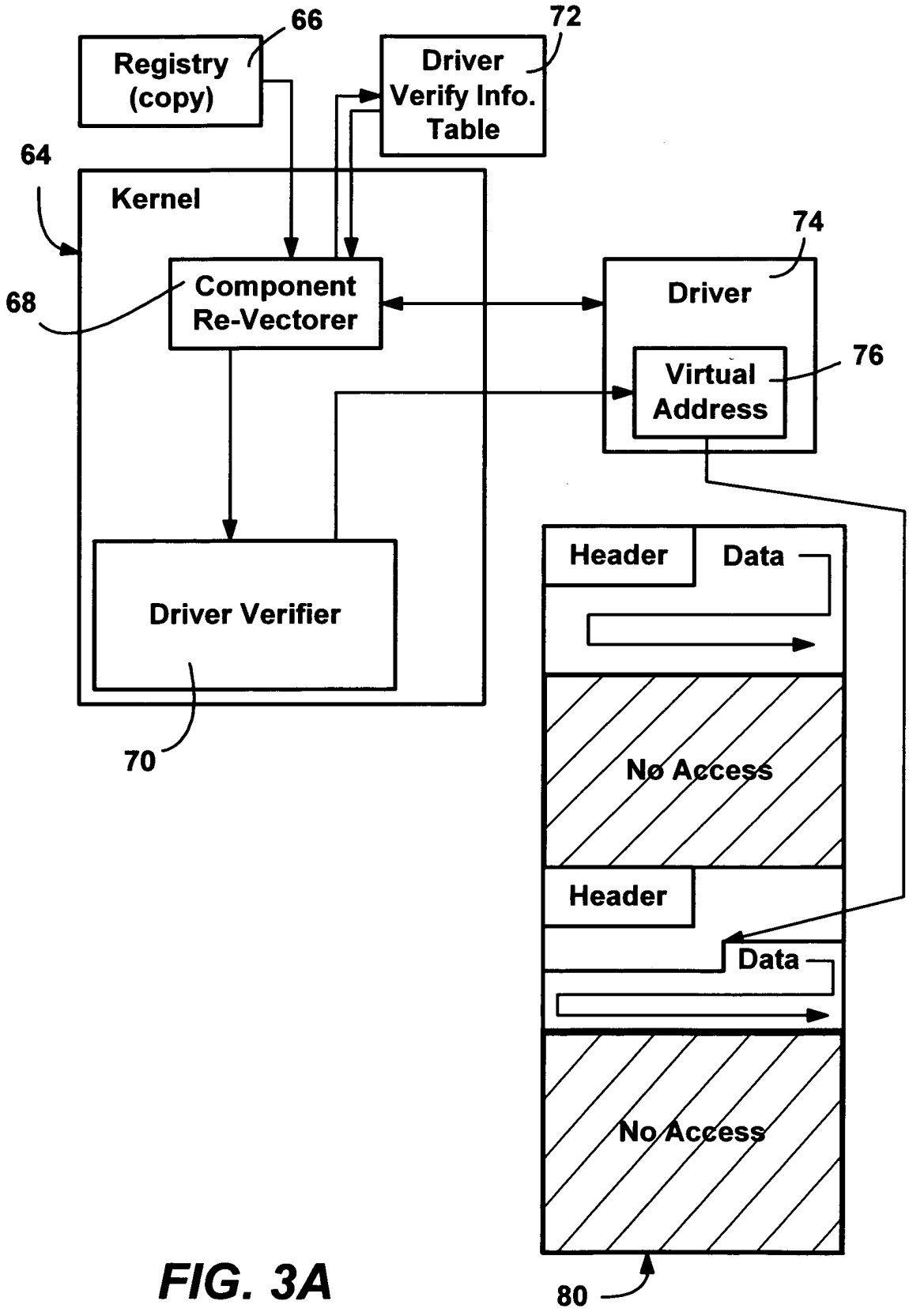

66
Registry (copy)
72
Driver Verify Info. Table
64
Kernel
74
Component Re-Vectorer
68
Driver
Virtual Address
76
Header
Data
Driver Verifier
No Access
Header
Data
No Access
70
80

FIG. 3A

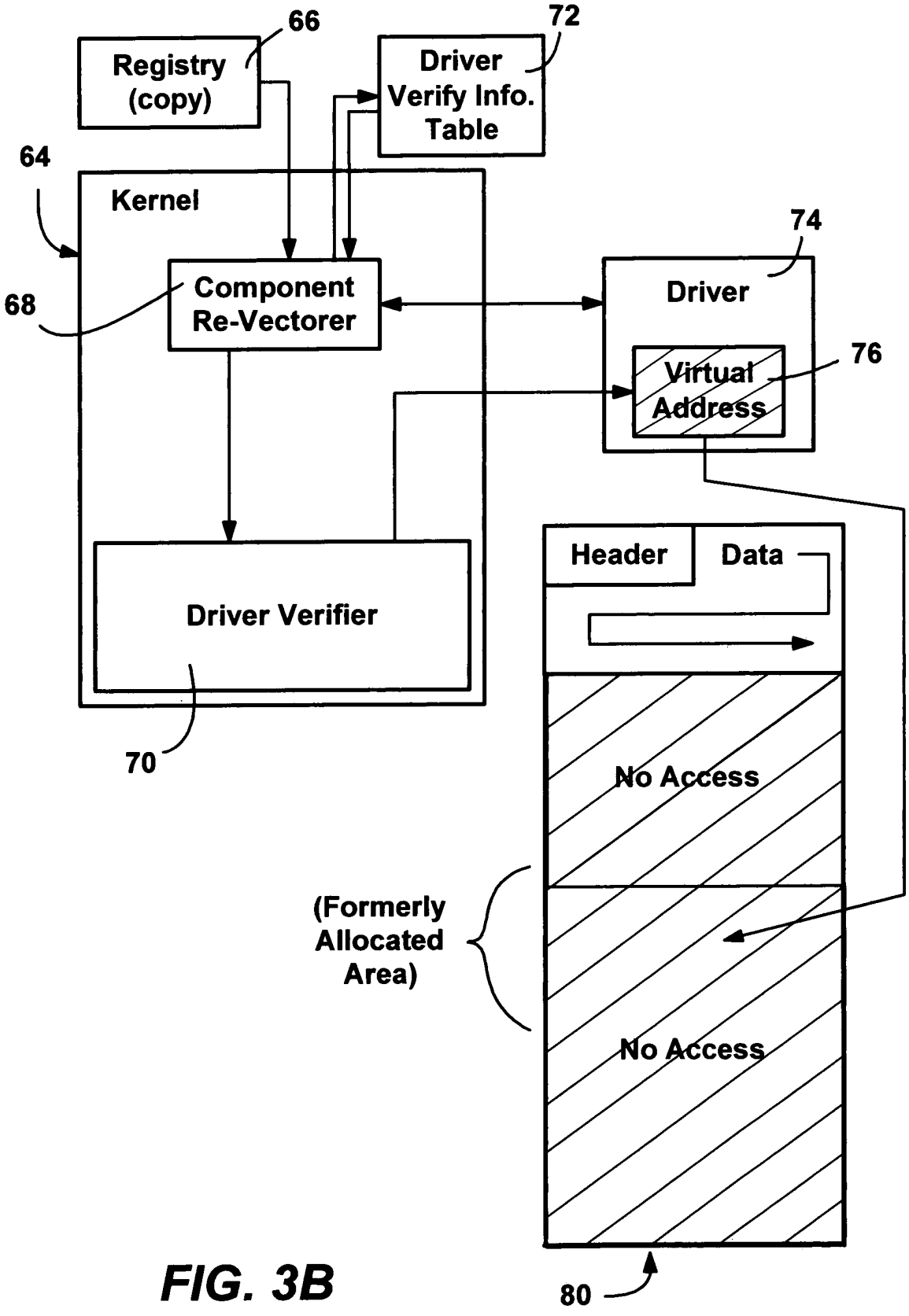

66
Registry
(copy)
72
Driver
Verify Info.
Table
64
Kernel
74
Component
Re-Vectorer
68
Driver
Virtual
Address
76
Header
Data
Driver Verifier
70
No Access
(Formerly
Allocated
Area)
No Access
80

FIG. 3B

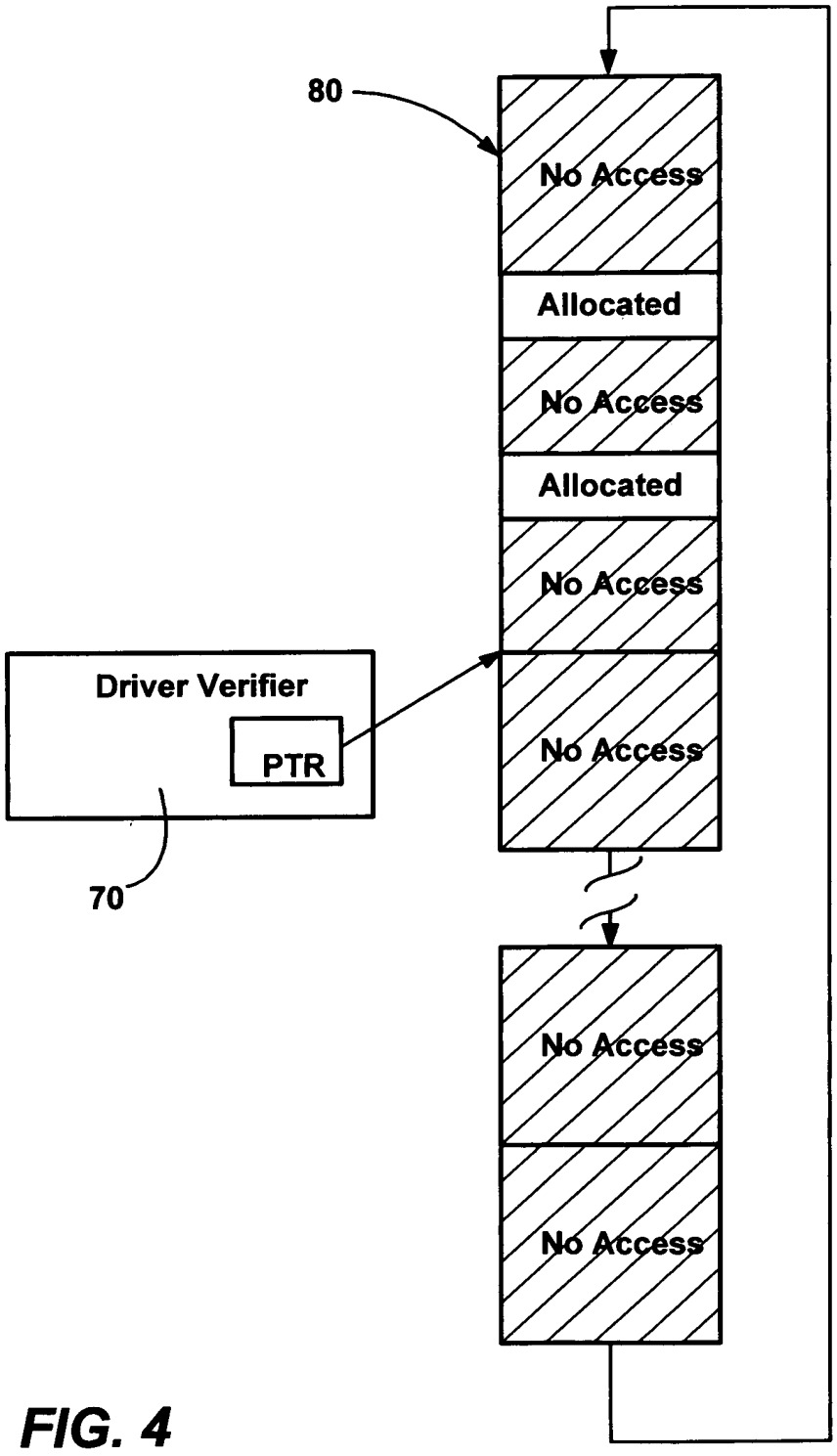

80
No Access
Allocated
No Access
Allocated
No Access
No Access
Driver Verifier
PTR
70
No Access
No Access

FIG. 4

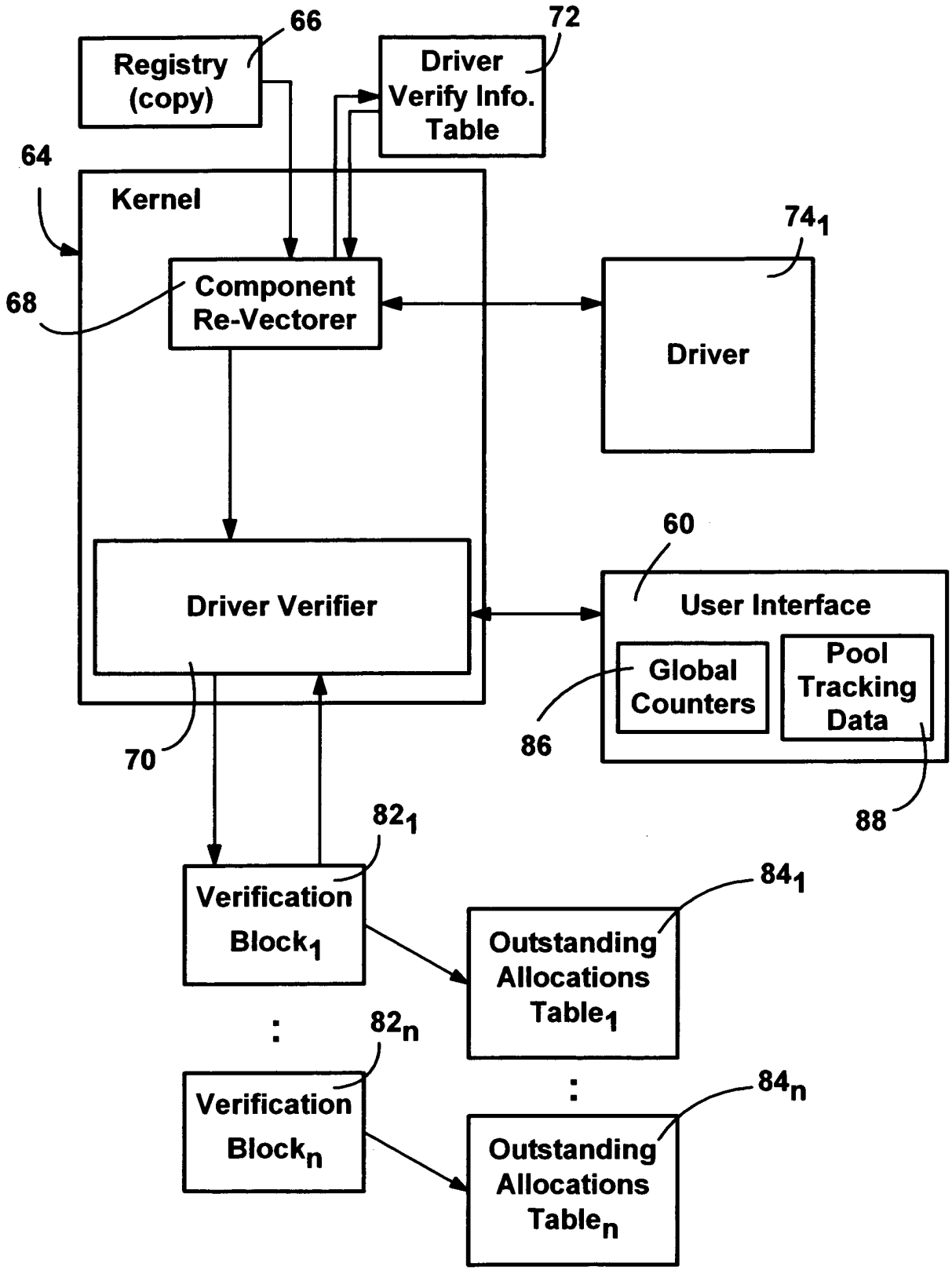

66
Registry (copy)
72
Driver Verify Info. Table
64
Kernel
74_1
68
Component Re-Vectorer
Driver
60
Driver Verifier
User Interface
Global Counters
Pool Tracking Data
86
70
88
82_1
Verification $Block_1$
84_1
Outstanding Allocations $Table_1$
82_n
Verification $Block_n$
84_n
Outstanding Allocations $Table_n$

FIG. 5

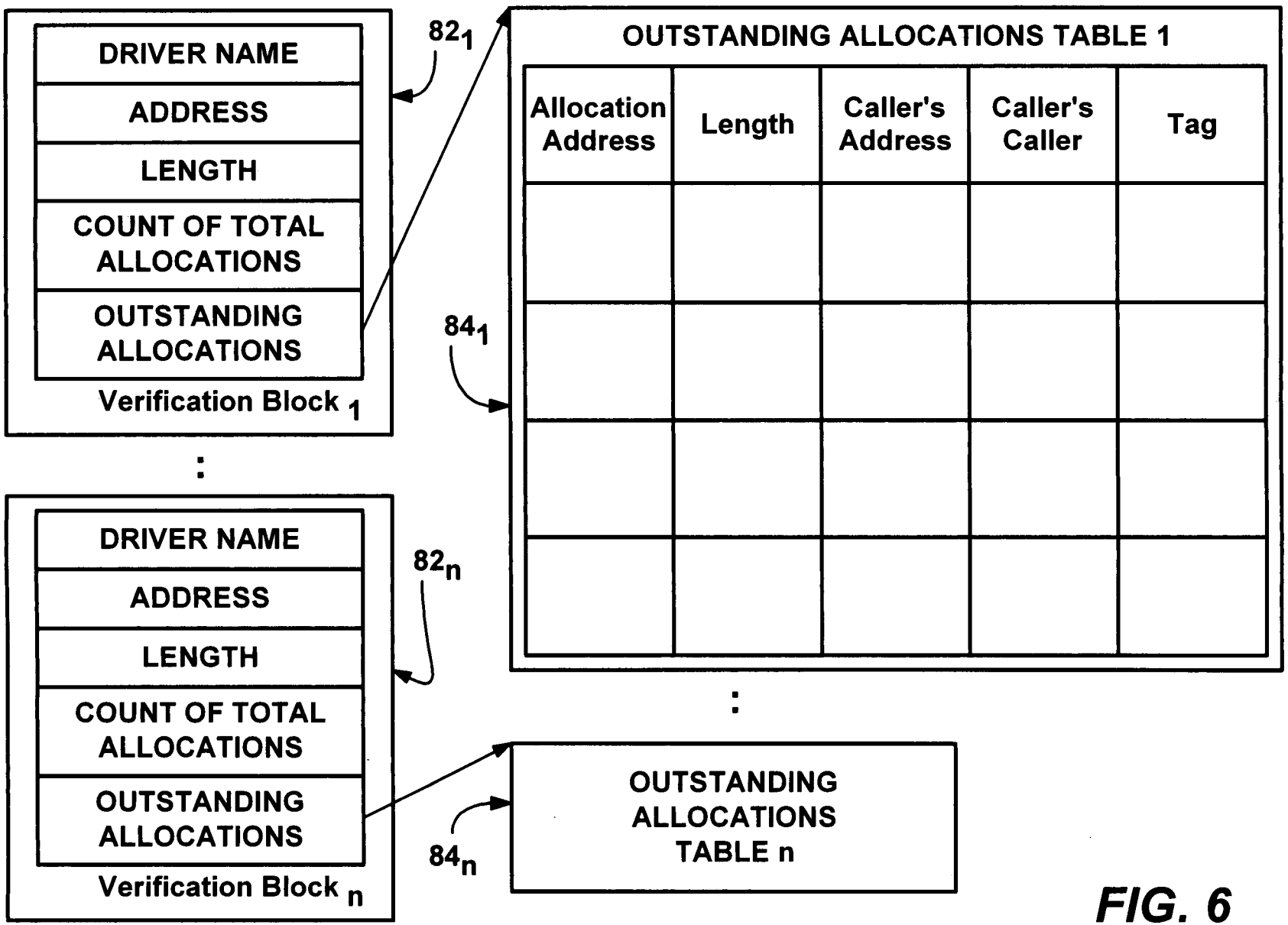

DRIVER NAME
ADDRESS
LENGTH
COUNT OF TOTAL ALLOCATIONS
OUTSTANDING ALLOCATIONS
Verification Block 1
82 1
84 1
OUTSTANDING ALLOCATIONS TABLE 1
Allocation Address
Length
Caller's Address
Caller's Caller
Tag
DRIVER NAME
ADDRESS
LENGTH
COUNT OF TOTAL ALLOCATIONS
OUTSTANDING ALLOCATIONS
Verification Block n
82 n
84 n
OUTSTANDING ALLOCATIONS TABLE n

FIG. 6

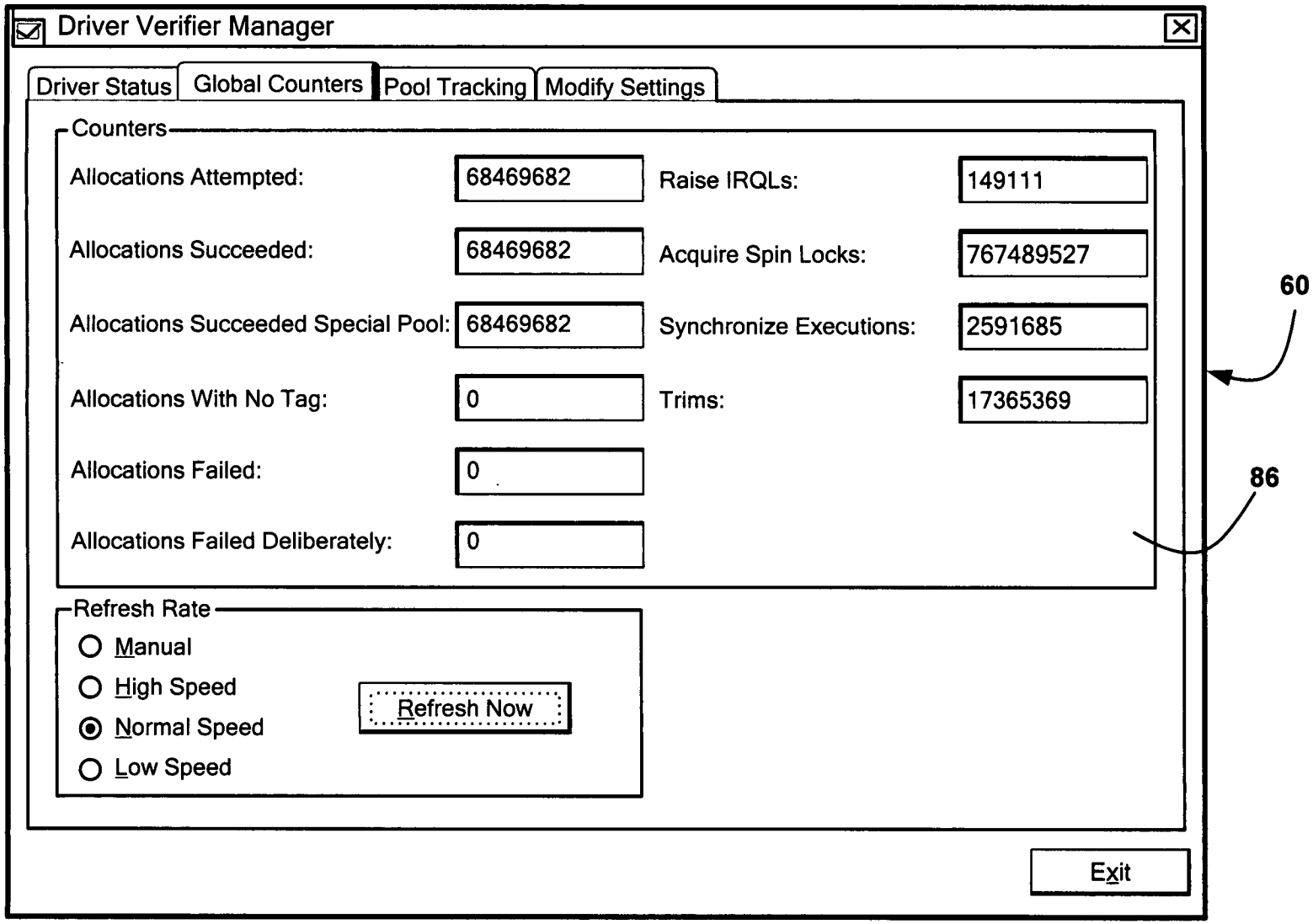

Driver Verifier Manager
Driver Status
Global Counters
Pool Tracking
Modify Settings
Counters
Allocations Attempted:
68469682
Raise IRQLs:
149111
Allocations Succeeded:
68469682
Acquire Spin Locks:
767489527
Allocations Succeeded Special Pool:
68469682
Synchronize Executions:
2591685
Allocations With No Tag:
0
Trims:
17365369
Allocations Failed:
0
Allocations Failed Deliberately:
0
Refresh Rate
Manual
High Speed
Normal Speed
Low Speed
Refresh Now
Exit
60
86

FIG. 7

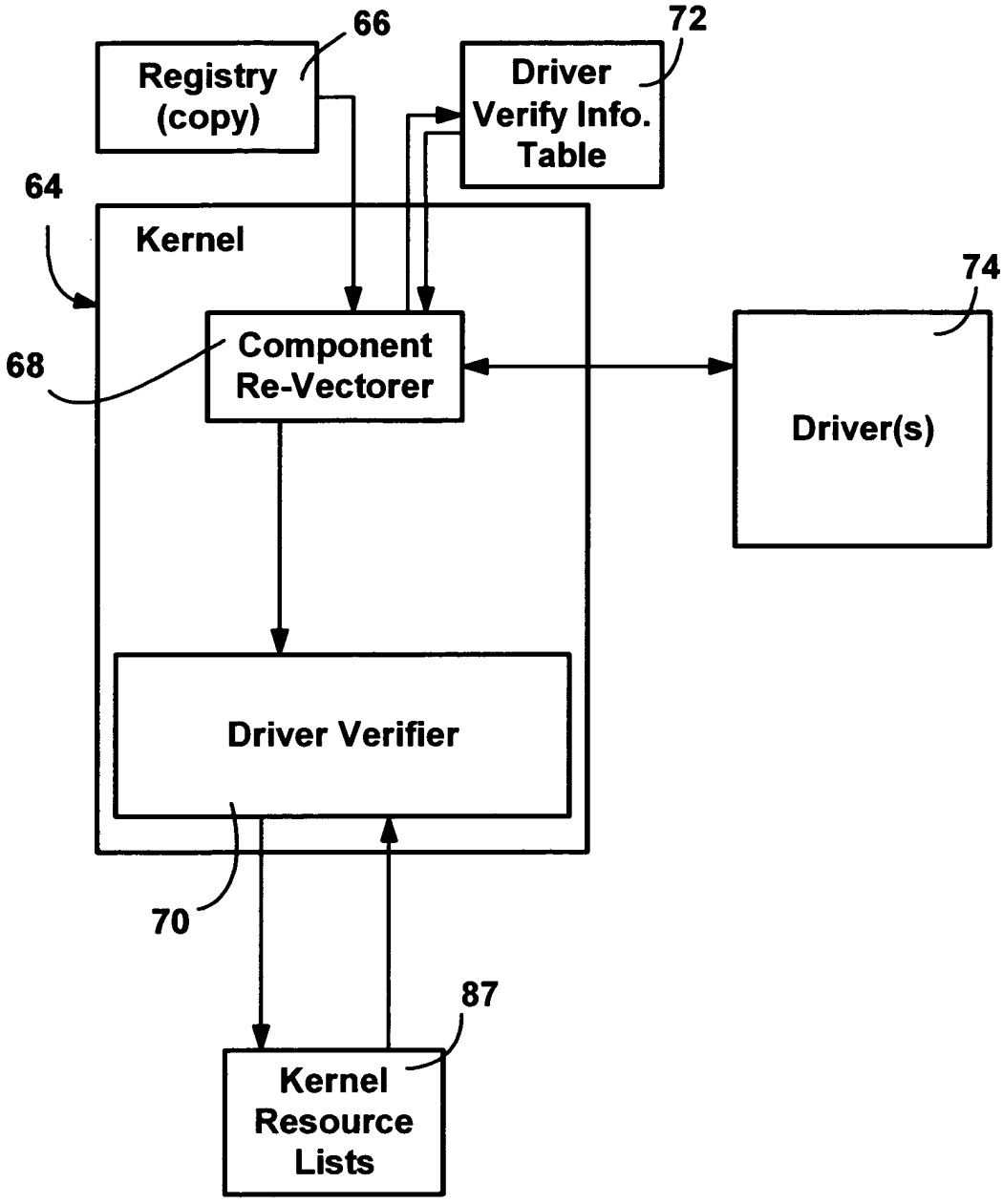

66
Registry
(copy)
72
Driver
Verify Info.
Table
64
Kernel
74
68
Component
Re-Vectorer
Driver(s)
Driver Verifier
70
87
Kernel
Resource
Lists

FIG. 8

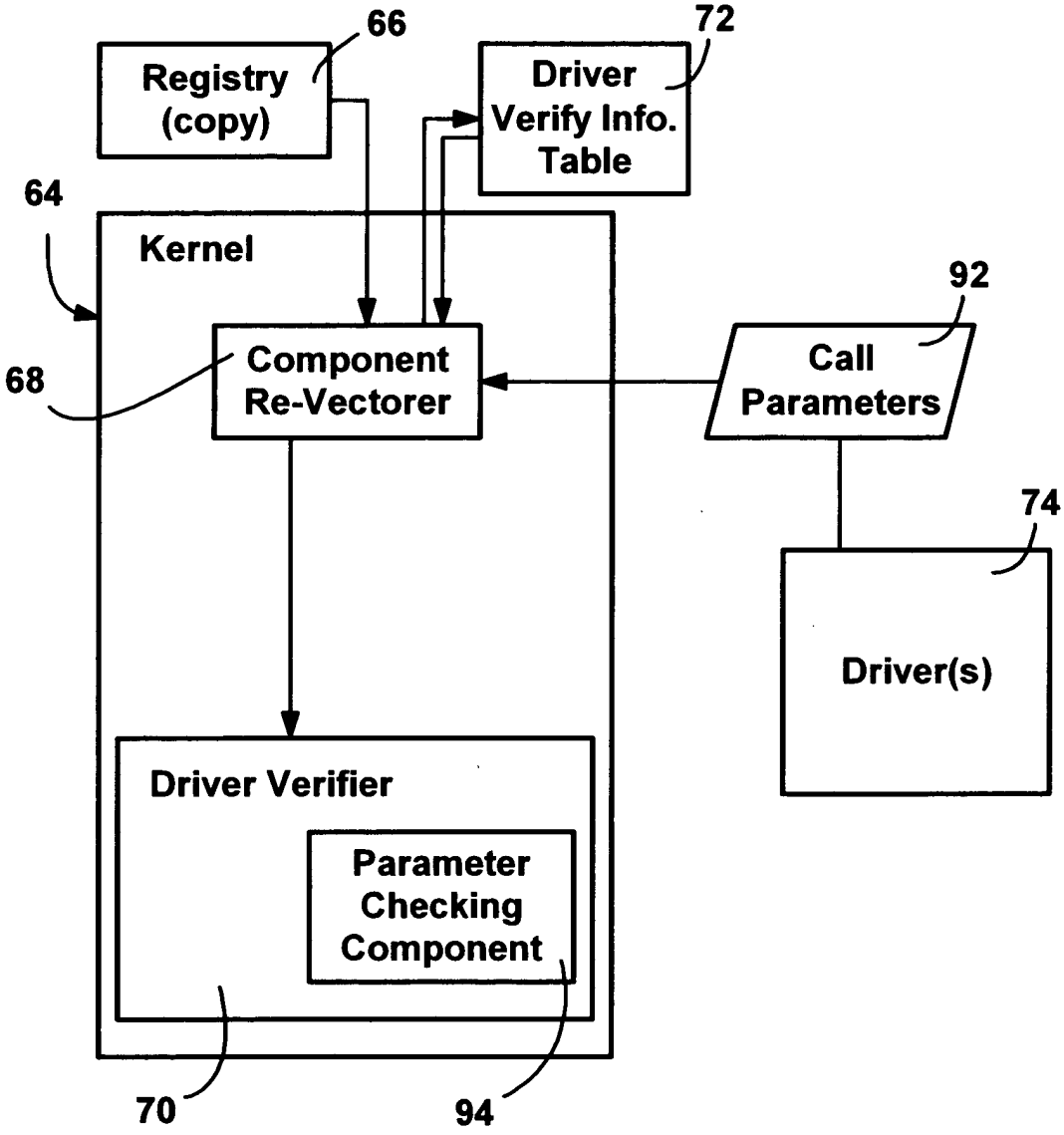

66
72
Registry
(copy)
Driver
Verify Info.
Table
64
Kernel
92
68
Component
Re-Vectorer
Call
Parameters
74
Driver(s)
Driver Verifier
Parameter
Checking
Component
70
94

FIG. 9

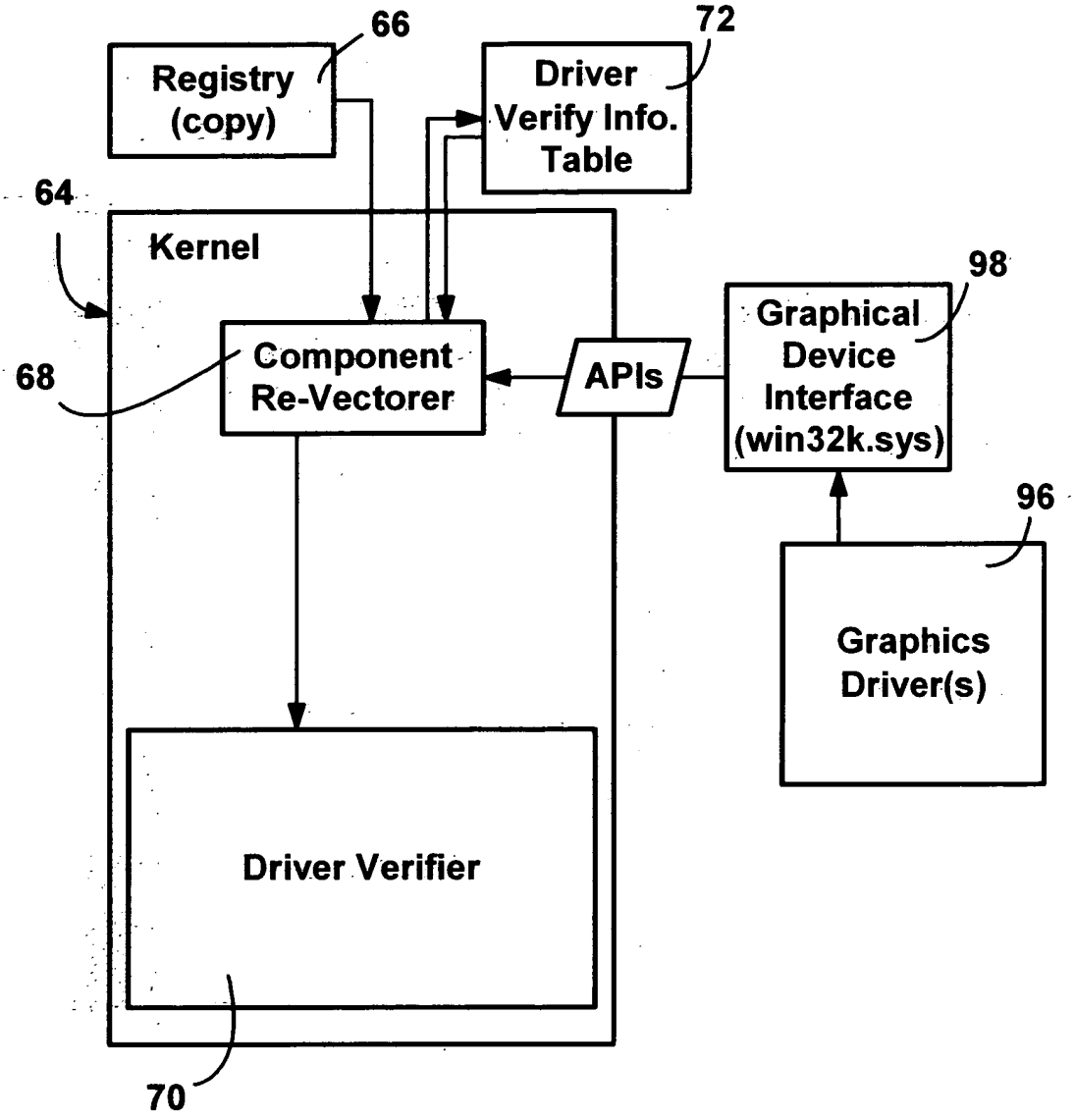

66
72
Registry
(copy)
Driver
Verify Info.
Table
64
Kernel
98
Graphical
Device
Interface
(win32k.sys)
68
Component
Re-Vectorer
APIs
96
Graphics
Driver(s)
Driver Verifier
70

FIG. 10

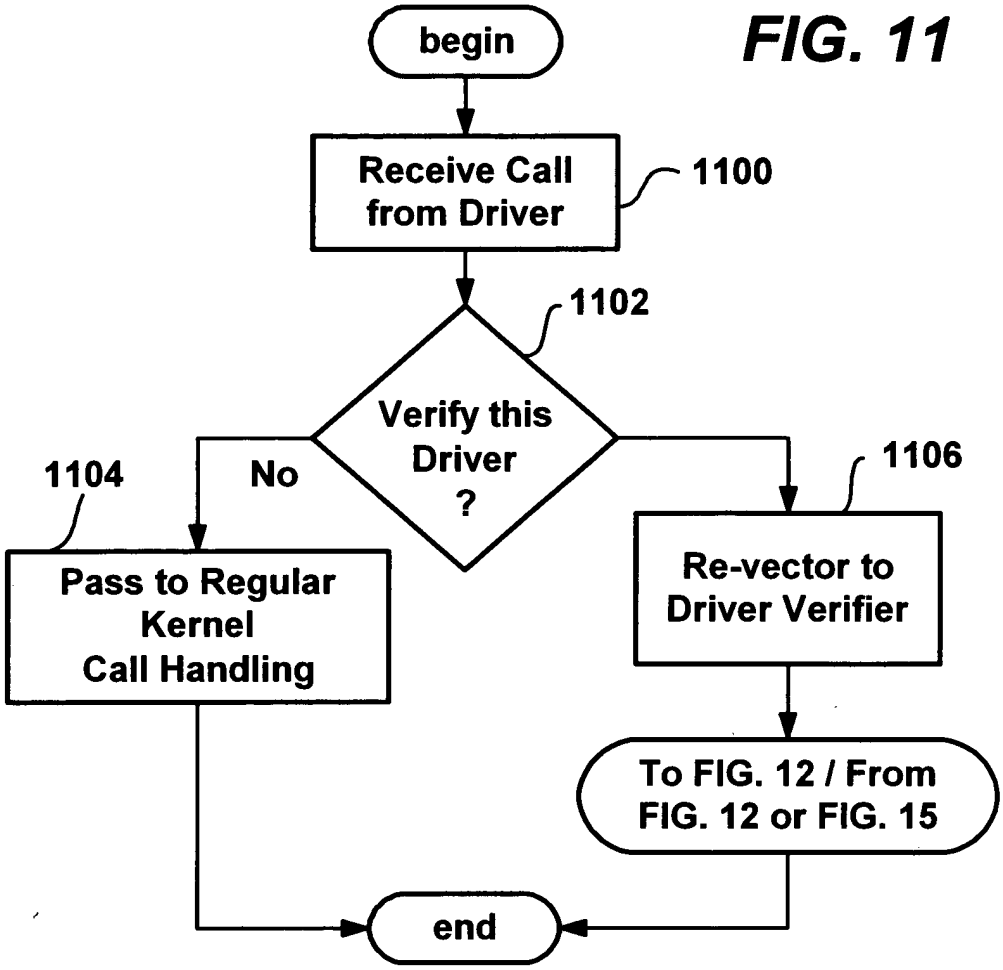

begin
Receive Call from Driver
1100
1102
Verify this Driver ?
No
1104
Pass to Regular Kernel Call Handling
1106
Re-vector to Driver Verifier
To FIG. 12 / From FIG. 12 or FIG. 15
end

FIG. 11

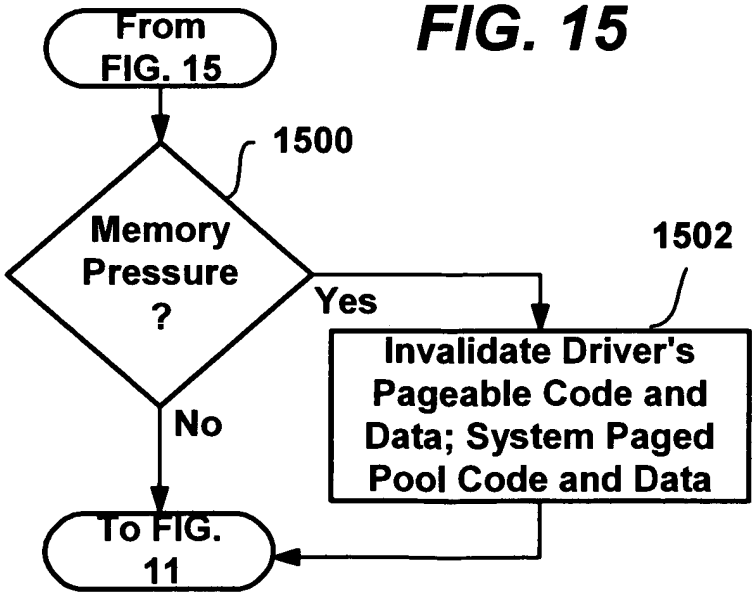

From FIG. 15
1500
Memory Pressure ?
Yes
1502
Invalidate Driver's Pageable Code and Data; System Paged Pool Code and Data
No
To FIG. 11

FIG. 15

FIG. 12

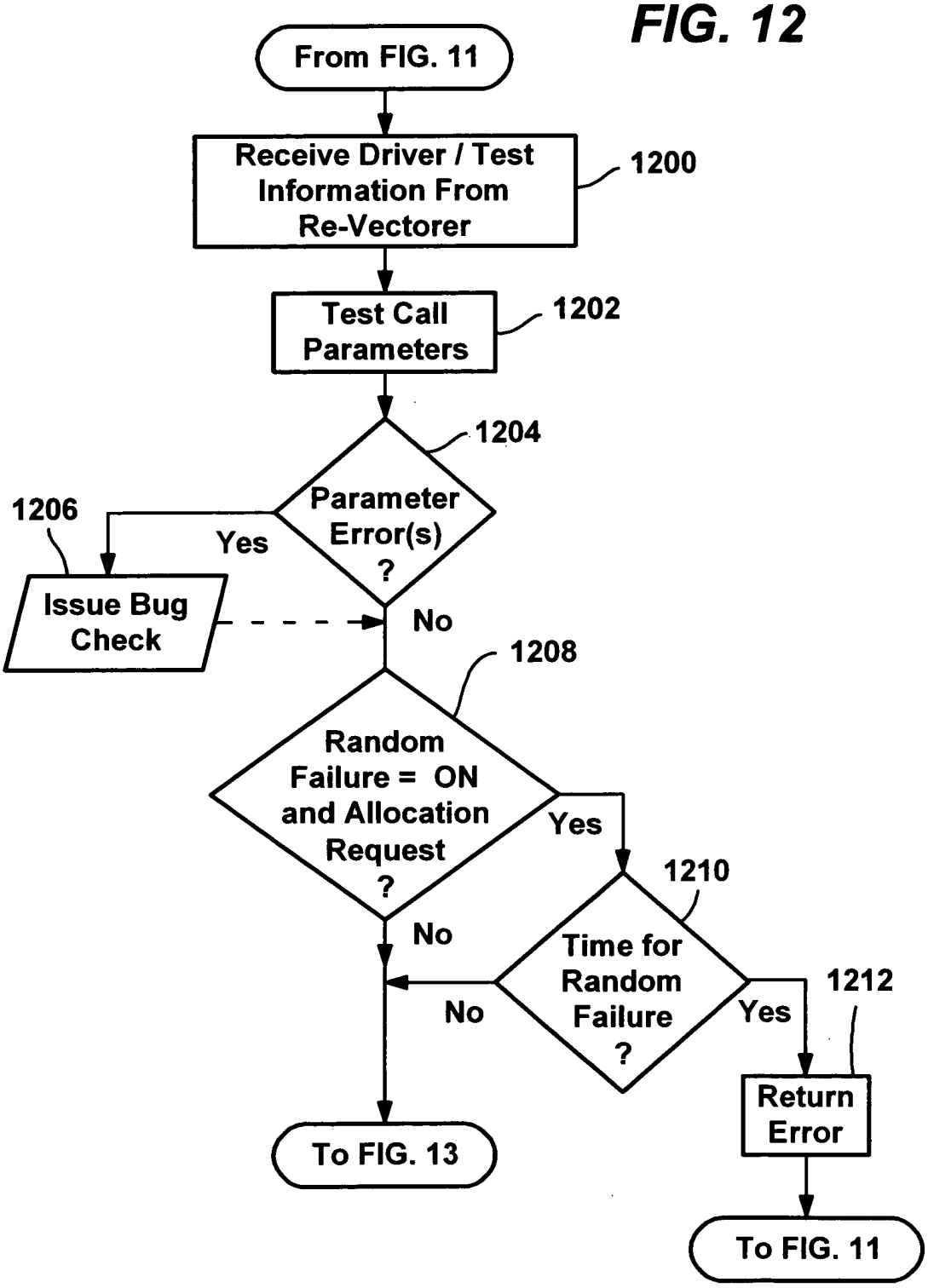

From FIG. 11
Receive Driver / Test Information From Re-Vectorer
1200
Test Call Parameters
1202
1204
Parameter Error(s) ?
1206
Yes
Issue Bug Check
No
1208
Random Failure = ON and Allocation Request ?
Yes
1210
No
Time for Random Failure ?
No
Yes
1212
Return Error
To FIG. 13
To FIG. 11

FIG. 13

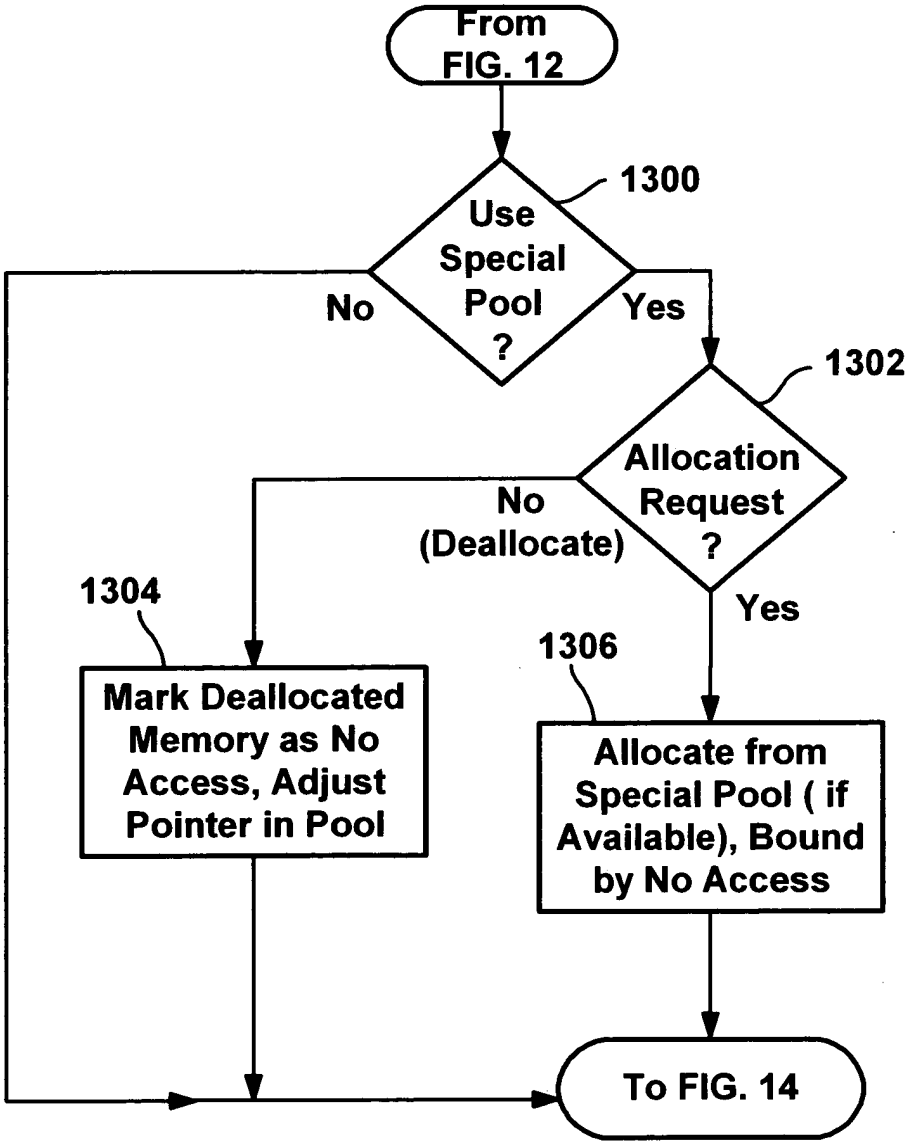
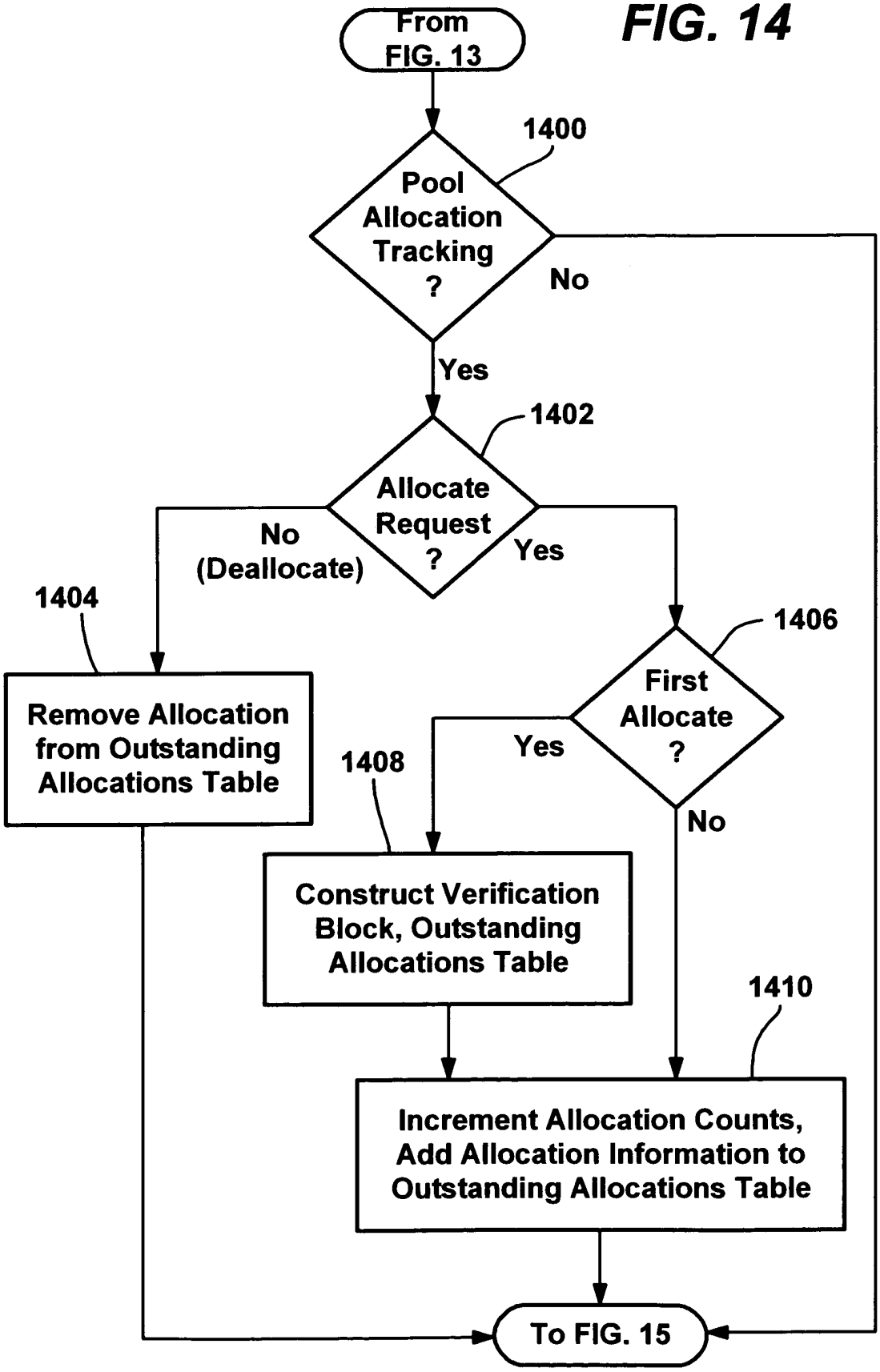

From FIG. 12
1300
Use Special Pool ?
No
Yes
1302
Allocation Request ?
No (Deallocate)
Yes
1304
Mark Deallocated Memory as No Access, Adjust Pointer in Pool
1306
Allocate from Special Pool (if Available), Bound by No Access
To FIG. 14

FIG. 14


From FIG. 13
1400
Pool Allocation Tracking ?
No
Yes
1402
Allocate Request ?
No (Deallocate)
Yes
1404
Remove Allocation from Outstanding Allocations Table
1406
First Allocate ?
Yes
No
1408
Construct Verification Block, Outstanding Allocations Table
1410
Increment Allocation Counts, Add Allocation Information to Outstanding Allocations Table
To FIG. 15

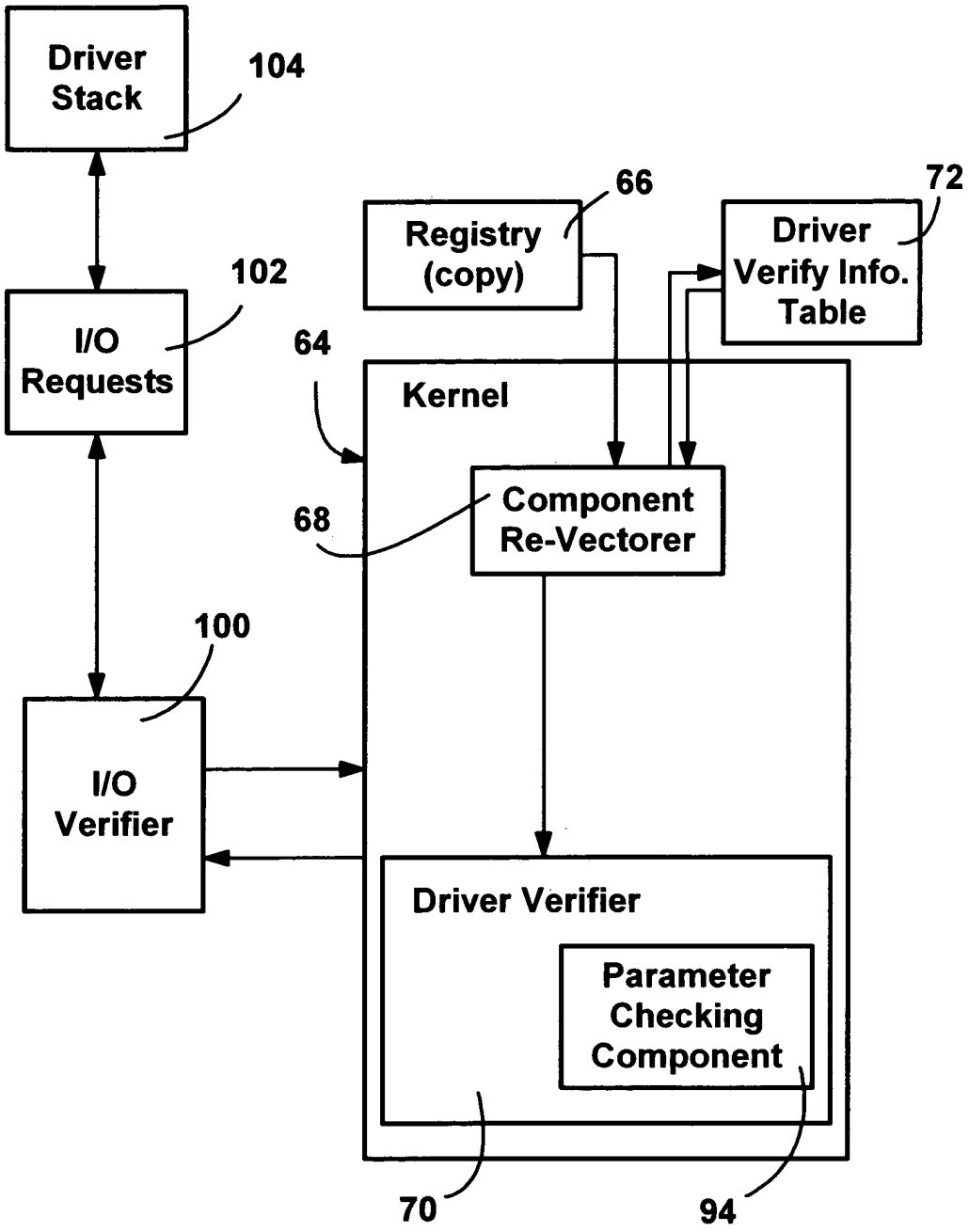

Driver Stack
104
I/O Requests
102
I/O Verifier
100
Registry (copy)
66
Driver Verify Info. Table
72
64
Kernel
Component Re-Vectorer
68
Driver Verifier
Parameter Checking Component
70
94

FIG. 16